

received data signal, the controller **145** exits the process and waits for the user to press other key button **141**.

[0069] FIG. **8** is a block diagram showing a signal transmitting and receiving system including a first electronic apparatus and a second electronic apparatus according to another exemplary embodiment.

[0070] The signal transmitting and receiving system **200** includes a first electronic apparatus **210** and a second electronic apparatus **250**.

[0071] Each of the first and second electronic apparatuses **210** and **250** may include an electronic apparatus having an IR module **211** or **251** disposed therein to transmit and receive an IR signal to and from a counterpart electronic apparatus **210** or **250** and a WiFi module **230** or **270** disposed therein to transmit and receive a WiFi signal to and from the AP such as the wired and/or wireless router. More particularly, Each of the first and second electronic apparatuses **210** and **250** may include an electronic apparatus, such as a mobile phone, a smart phone, a notebook computer, a PDA, a tablet PC or the like, in which the IR module **211** or **251** and the WiFi module **230** or **270** are structurally or spatially disposed adjacent to each other. Hereinafter, the first and second electronic apparatuses **210** and **250** are assumed and explained as a smart phone.

[0072] Thus, the first and second electronic apparatuses **210** and **250** may provide or receive a content, such as a photo, a motion image, a document or the like to or from each other. Hereinafter, for the sake of convenience in explanation, it is assumed that the first electronic apparatuses **210** receives the content from the second electronic apparatuses **250** and the second electronic apparatuses **250** provides the content to the first electronic apparatuses **210**.

[0073] Also, the first and second electronic apparatuses **210** and **250** may do a wireless internet via the WiFi modules **230** and **270**, respectively.

[0074] As shown in FIG. **8**, the first electronic apparatus **210** is a smart phone capable of preventing a problem in which an IR signal is distorted thus to result in an inoperable condition or malfunction thereof, due to an interference by a first WiFi module **230**, when receiving the IR signal from the second electronic apparatus **250** which is a counterpart electronic apparatus, and include a first IR module **211**, a first signal decoder **213**, a first signal encoder **217**, a first signal analyzer **215**, a first storage **220**, a first WiFi module **230**, a first power supply **235**, a first display **241**, a first user input **243** and a first controller **245**.

[0075] The construction of the first electronic apparatus **210** is the same as that of the electronic apparatus **110** of the display system **100**, as explained with reference to FIG. **1**, except for the first IR module **211**, the first signal encoder **217**, the first signal analyzer **215**, the first display **241**, the first user input **243** and the first controller **245**. Accordingly, only the first IR module **211**, the first signal encoder **217**, the first signal analyzer **215**, the first display **241**, the first user input **243** and the first controller **245** will be explained in detail below.

[0076] The first IR module **211** includes a first IR receiver **212** and a first IR transmitter **216**. The first IR receiver **212** as an IR module receives a remote control signal of an IR frequency band, for example, 38 KHz or 58 KHz from a second IR module **251** of the second electronic apparatus **250** and outputs the received remote control signal to the first signal decoder **213**.

[0077] The first IR transmitter **216** converts a data signal encoded by the first signal encoder **217** into an IR signal of the IR frequency band to transmit to the second IR module **251** of the second electronic apparatus **250**. According to a user's input through the first user input **243**, the first signal encoder **217** encodes data for transmission outputted from the first storage **220** to output an encoded data signal to the first IR transmitter **216** under a control of the first controller **245**.

[0078] The first signal analyzer **215** analyzes whether the data signal outputted from the first signal decoder **213** has a pulse format coinciding with that of the IR signal as shown in FIG. **2** so that it is an abnormal state where it is distorted to include a noise created therein, and outputs the pulse format analysis result along with the received data signal to the first controller **245**. At this time, the first signal analyzer **215** may perform the pulse format analysis at regular intervals.

[0079] The first display **241** converts image data received from the first controller **245** according to a user's input through the first user input **243** during an operation of the first electronic apparatus **210**, into an analog signal to display thereon. The image data may include various motion and still images, a limited number of letters, condition information, etc. That is, the first display **241** may provide various screens according to a use of the first electronic apparatus **210**, for example, a lock screen, a home screen, an application execution screen, a menu screen, a message processing screen, a call screen, an internet screen, a keypad screen, etc.

[0080] The first display **241** may be configured as a flat plate display panel, such as a liquid crystal display (LCD) panel, an organic light emitted diode (OLED) panel, an active matrix organic limited diode (AMOLED) panel, etc.

[0081] The first user input **243** sense a user's input and transmits an input signal corresponding to the sensed user's input to the first controller **245**. The first controller **245** controls corresponding components in response to the input signal.

[0082] The first user input **243** may be configured as a touch screen disposed on a front surface of the first display **241**.

[0083] The first controller **245** controls a general operation of the first electronic apparatus **210** according to a processing and controlling program for the first controller **245** stored in the first storage **210**.

[0084] Also, the first controller **245** stores the data signal received from the first signal analyzer **215** in the first storage **210** and displays an image corresponding to the received data signal on the first display **241**. At this time, if the data signal is distorted to have a noise or the like created therein due to an interference by the first WiFi module **230**, a problem may arise in that a quality of the received data signal is deteriorated or an error occurs. To prevent this, like the controller **145** of the electronic apparatus **145**, the first controller **245** determines whether the received data signal is a normal signal based on the pulse format analysis result received from the first signal analyzer **215**, and control a power supplied to the first WiFi module **230** according to the determination.

[0085] To be more specific, the first controller **245** determines whether the received data signal is an abnormal state where it is distorted to include a noise therein based on the received pulse format analysis result.